REMARKS/ARGUMENTS

Claim 1 is amended to require a pressing force of 20,000 N or more (see page 6, lines 17 et seq.).

Claims 1-6 are rejected as anticipated by Suzuki (JP 5-69023). Reconsideration is requested in view of the differences detailed below.

Shown in Fig. 1 of the cited reference Suzuki is a copying roller 9. The copying roller 9 acts at the inlet of an induction heating unit 4, to prevent a steel plate 3 from running against the lower surface of an upper coil in the induction heating unit. When considered on the basis of said concept, a copying roller 9 has no utility if installed at an outlet of the induction heating unit 4.

On the other hand, according to claims 1 to 6 of the present application, (and as shown in Figs. IC to 1G), a pressing roll 2 is installed at the outlet of an induction heating unit. For example, in a case when a steel plate 4 has entered a coil 1, if it deviates from the center of a gap of the coil 1, the flowing induction currents becomes nonuniform near the upper and lower surfaces of the steel plate and there are generated differences in temperature at the upper and lower portions of the steel plate whereby a camber is produced. If, at this time, a steel

plate is restrained by a pressing roll and a transfer roll at the outlet of the induction heating unit, an upward or downward camber does not form, flatness of the steel plate can be maintained and there can be avoided damages to facilities caused by collision with a subsequent induction beating unit 1 to enter next.

Further, as set forth in the present application on page 6 at lines 17 to 25, a pressing force of 20,000 to 100,000 N or more is applied and for receiving the force of the pressing roll 2, a lower roll (transfer roll 3 in Figs. 1C to 1G) is necessary. Therefore, the present invention is substantially dissimilar to the cited reference Suzuki which does not indicate the necessity of lower rolls.

Applicants therefore submit that claims 1 to 6 of the present application are not shown or suggested by the cited reference Suzuki.

Claims 7 to 12 are rejected over Kim and the cited reference Suzuki (discussed above):

The invention of the cited reference Kim is, as set out in column 1 under the heading Field of the Invention at lines 6 to 11 and column 1 at lines 42 to 45, "The present invention relates to a rolling device, and particularly to an electric heating type rolling device which improves reduction ratio and prevents overheating of a metal strip and

resultant surface oxidization thereof by heating the same using a pulse current during a continuous rolling process". And, under these circumstances, it is advisable and rational to heat metal strip as close as possible to work rolls to adjust the temperature of the metal strip. For such a purpose, it is conceivable to employ a high-frequency induction heating method and an electric heating method wherein no heating furnaces are used.

On the other hand, claims 7 to 12 of the present application is for performing heat treatment by heating a steel plate by induction heating and therefore, in the first place, the object of heating is different. One would not look to Kim to accomplish the requirement of the present invention. Also, as explained below, the Kim method is counter-indicated for the present invention heating.

An induction current, which is a heating means, required in claims 7 to 12 of the present application, is generated by moving inside a magnetic field of a steel plate and the induction current flows only within the steel plate. Unlike the case of Kim in which an electric circuit is formed and through which electric current flows into a steel plate and the current flows out of the steel plate, the structure and effect of the heating unit of the present application is quite different.

In this connection, as recited in claims 7 to 12 of the present application, the pressing roll has electric resistance larger than that of the steel plate and the transfer roll and the pressing roll are connected by a short circuit. A reason for this is to prevent electric flow between the steel plate and the pressing roll or the transfer roll, in other words, generation of spark, as set out in the specification of the present application on page 7 at lines 7 to 21. This is completely the exact opposite of Kim by which an electric current flows between a steel plate and a roll.

It is therefore submitted that it would not have been obvious to arrive at the requirements of claims 7 to 12 of the present application based on the two different technical thoughts or bases of cited reference Kim and the cited reference Suzuki.

It is therefore submitted that claims 7 to 12 of the present application are not shown or suggested over any combination of the cited art.

Claims 13 to 16 are rejected over Sekine and the cited reference Suzuki (discussed above):

The cited reference Sekine was invented by an applicant and inventors who are same with those of claims 13 to 16 of the present

application. The cited reference Sekine, as can be seen from claim 1, paragraph No. (0017] and Fig. 3., uses heating by inductor 4 while being adjusted with hot leveler 3. In other words, during form-adjusting, portions which have been form-adjusted are heated in turn with an induction heating unit.

Further, as discussed, shown in Fig. 1 of the cited reference Suzuki is a copying roller 9. The copying roller 9 guides at an inlet of an induction heating unit 4 to prevent a steel plate 3 from running against the lower surface of an upper coil in the induction heating unit. When considered on the basis of this concept, a copying roller 9 is not necessary to be installed at an outlet of the induction heating unit 4.

On the other hand, claims 13 to 16 of the present application are dependent claims of claims 1 to 12 and as shown in Figs. 1C to 1G, a pressing roll 2 has to be installed at the outlet of an induction heating unit. For example, as explained above, in a case when a steel plate 4 has entered a coil 1, if it deviates from the center of a gap of the coil 1, the flowing induction currents becomes nonuniform near the upper and lower surfaces of the steel plate and there are generated differences in temperatures at the upper and lower portions of the steel plate is hereby a camber is formed. If, at this time, a steel plate is restrained

by a pressing roll and a transfer roll at the outlet of the induction heating unit, an upward or downward camber does not form, flatness of the steel plate can be maintained and there can be avoided damages to facilities caused by collision with a subsequent induction heating unit 1 which is entered next.

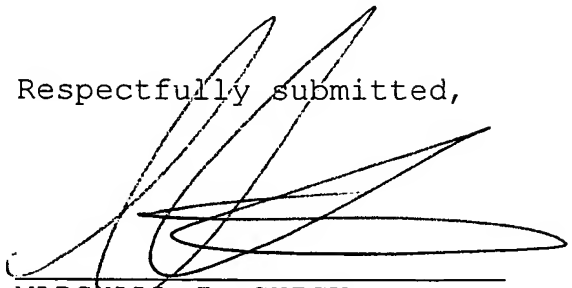
Further, as set forth in the specification of the present application on page 6 at lines 17 et seq. (now required in Claim 1), a pressing force of 20,000 to 100,000 N or more is applied and for receiving the force of the pressing roll 2, a lower roller (shown as transfer roll 3 in Figs. 1C to 1G) is necessary. Therefore, the present invention is substantially different from the cited reference Suzuki which does not indicate the necessity of lower rolls.

It is therefore submitted that claims 13 to 16 of the present application are not shown or suggested by the two different technical thoughts of cited reference Sekine and the cited reference Suzuki.

Therefore, Claims 13 to 16 of the present application are not shown or suggested by the cited art in combination.

In view of the above, the rejections are avoided. Allowance of the application is therefore respectfully requested.

Respectfully submitted,



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